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Prevalence and Risk Factors of Glaucoma in Adult Patients at Tikrit City

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Abstract **Background:** Glaucoma, the second most common cause of blindness and the main cause of irreversible blindness, has a significant impact on people all over the world. Primary open-angle glaucoma is the most prevalent glaucoma subtype among adults (40-80 years old). Primary angle-closure glaucoma is linked to the closure of the anterior chamber angle of the eye and is known to have a higher risk of bilateral blindness, which places a severe burden on families and society. **Objectives:** To determine the prevalence of glaucoma in adult patients and to determine common types of glaucoma and to find out the relationship between glaucoma and demographic characteristics of patients and determine common causes of glaucoma. **Methods:** Cross-sectional study design was adopted from 15 September 2024 to 15 April 2025 at Tikrit Teaching Hospital in Tikrit District, Salah Eden. To achieve the objectives of the present study. A purposive sample involving 300 glaucoma patients. Data collection tools composed from (6) parts, which includes the following: Part one demographic information of patients, Part two medical history, Part three lifestyle of patients with glaucoma, Part four signs and Symptoms of patients with glaucoma, Part five risk factors of patients with glaucoma, Part six daily activities of patients with glaucoma. The study results were examined using both a descriptive analysis and an inferential analysis procedure (e.g., Binomial test, Chi-Square test and Contingency Coefficients) a p-value of <0.05 was detected to be statistically significant. **Result:** The results shows 143(53.0%) from sample were male and 127(47.0 %) were female. With regard to the age group high numbers at the ages falling within the third, fourth and fifth age groups, since they are accounted 174(64.44%), most of them were a housewife and they are accounted 106(39.3%) and of them having high numbers at the low education levels of under a primary school, since they are accounted 151(55.9%). More than half of studied sampled have a prevalence of "Primary (Idiopathic) open angle glaucoma" and represent 138(51.1%), while prevalence of "Pesudoexfoliation related open angle glaucoma" type are accounted 35(13.0%). Also the results shows 103(38.1%) have Diabetes Mellitus, 139(51.5%) have increase Blood Pressure item, 120(44.4%) have previous eye surgery and 253(93.7%) have elevated of intraocular pressure (IOP). **Conclusion:** This study concludes risk factors and prevalence of glaucoma may increase with age and most risk factors for glaucoma were diabetes mellitus, increase blood pressure, previous eye surgery and increase intra ocular pressure while the most prevalence types were Primary (Idiopathic) open angle glaucoma and Pesudoexfoliation related open angle glaucoma.

Key Words Prevalence, Glaucoma, Primary Open-Angle Glaucoma, Pesudoexfoliation

INTRODUCTION

The second most prevalent cause of blindness and the main cause of irreversible blindness, glaucoma, has a significant impact on people all over the world. POAG is the most prevalent glaucoma subtype. POAG cases among adults (40-80 years old) are predicted to reach 52.68 million cases in 2020 and 79.76 million cases in 2040 [1]. Primary angle-closure glaucoma, is the most prevalent type of glaucoma, the number of people affected by PACG worldwide would be 23.36 million in 2020 and 32.04 million in 2040, with more than three-quarters of those affected living in Asia. It is linked to the closure of the anterior chamber angle of the eye and is known to have a higher risk of bilateral blindness, which places a severe burden on families and society [2]. Primary Open Angle Glaucoma (POAG) is more common in Africa (4.20%, 95% CI 2.08 to 7.35%), whereas Primary Angle Closure Glaucoma (PACG) is more common in East Asia (1.09%, 95% CI 0.43 to 2.32). An estimated 1.96% of people have POAG on average. Perhaps due to their longer life expectancy than men, women are predicted to make up more than 55% of persons with (OAG) [3]. However, considering the geographical, lifestyle and epidemiological relationships between Middle Eastern (ME) and Asian nations, researchers predicted that the prevalence of (POAG)

in ME patients is closer to those of Asian nations. The prevalence of (POAG) is significantly higher in Asia than it is in Europe (2.82%; 95% confidence interval, CI, 1.67-3.06% versus 1.47%; 95%CI 1.06-2.06%) and clinical data from ME nations indicates that POAG is more common in Asia than it is in Europe [4]. The Study objectives were to determine the prevalence of glaucoma, determine common types of glaucoma in adult patients at Tikrit city and to find out the relationship between glaucoma and demographic characteristics of patients.

METHODS

Before starting and embarking upon and conducting the steps of the study. A proposal detailing the title and methodology of the research has been submitted to the Scientific for Graduate Studies at the University of Mosul's College of Nursing. Following which the research title has received formal approval. Furthermore, the University of Mosul's collegiate council for medical research ethics granted ethical approval for the study to be carried out. Accomplishment approval was obtained from the Salah-Eden Health Directorate's (Planning Department, Section of Health Research). The permission was later forwarded to Tikrit Teaching Hospital to ensure their approval in order to obtain formal permission for data collection. The study used a descriptive cross-sectional study design to identify the prevalence and risk factors for glaucoma in the adult population who are diagnosed with glaucoma. The study adopted for the period extended from 15 September 2024 to 5 January 2025. The study was conducted at Tikrit Teaching Hospital in Tikrit District, Tikrit is the capital of Salah Eden Governorate. The data of the current study were collected from one hospital in the Tikrit district for the period from 15 September 2024 to 5 January 2025. A purposive sample for a cross-sectional study was taken, where the samples consisted of 300 cases with glaucoma disease according to the inclusion and exclusion criteria of adult populations with glaucoma disease in the Tikrit district. The study instrument was a structured interviewing questionnaire and composed of (6) parts, which included the following: Part One this part included the following items: Demographic information of patients, Part Two focuses on medical history and contains (10) items, Part Three this part focus on Lifestyle of patients with glaucoma include, Part Four this part focuses on Signs and Symptoms of patients with glaucoma, Part Five this part focuses on risk factors of patients with glaucoma, Part six this part focuses daily activities of patients with glaucoma. The interview was conducted to fill out the questionnaire with patients with glaucoma in the Ophthalmology consultation clinic and each participant needed approximately (15-30) minutes to complete the data collection. The pilot study was carried out from 15 September 2024 to 25 September 2024. The pilot study was conducted before the start of the study on a convenient sample of 10 individuals who were selected among studied patients with glaucoma disease from Tikrit Teaching Hospital. The samples of the pilot study were also excluded in the current study. To determine the reliability of researcher dependency (The Reliability) compare between observer and co-observer (Inter Examiners). To determine the reliability of respondents dependency (The Reliability) compare between test-retest (Intra Examiner). Validation of the tool of the study was performed to provide confidence in the results through a panel of fourteen experts was chosen from different specialties to examine content validity for clarity, relevance and applicability of it.

Statistical Data Analysis

After data collection was complete, responses were anonymized and encoded for statistical analysis. The data was examined using Statistical Package for the Social Sciences (SPSS) version (22.0) by using Descriptive data analysis and Inferential data analysis.

RESULTS

Table 1 shows the result of most of glaucoma patients were males and constitute 143(53.0%) with regard to the age group high numbers at the ages falling within the third, fourth and fifth age groups, since they are accounted 174(64.44%), as well as age of studied patients is estimated at the average 54.23 years. with standard deviation 14.51 years and the majority of them were a housewife and they are accounted 106(39.3%) and of them having high numbers at the low education levels of under a primary school, since they are accounted 151(55.9%) and finally most of them are married and accounted 194(74.85%). All of studied adults patient's SDC has a restricted distribution, since a significant differences are accounted between the observed and there an expected frequencies distribution at $p<0.01$, exceptional of gender variable, since accounted no significant different at $p>0.05$.

Table 2 shows distribution of studied sample with "Risk Factors" and comparison's significant results shows more than one third of them had a positive response towards "Diabetes Mellitus" item, since they are accounted 103(38.1%), more than half of them had a positive response towards "Increase Blood Pressure" item and accounted 139(51.5%), only 9(3.30%) of them had a positive responses towards "Increase in intracranial pressure" item, 120(44.4%) of them had a positive response towards "Previous eye injuries", while 34(12.6%) of them had a positive response towards "Eye Surgeries" and 12(4.40%) of them had a positive responses towards "Birth defects", mainly of them 253(93.7%) had a positive response towards "Elevated of intraocular pressure (IOP)" item and finally about two third of them had a positive responses towards "Wearing Sunglasses" item and accounted 169(62.6%). Also the results appear most of studied items are reported highly significant differences at $p<0.01$, exceptional of "Increase blood pressure" item, since no significant different are accounted at $p>0.05$.

Result shows that physical activities among different groups has a restricted distribution, since a highly significant different at $p<0.01$ are accounted compared within there an expected outcomes under randomly assumed distribution, where only 24(8.90%) of studied respondents who were lifting heavy weights, while most of them 239(88.5%) hasn't aerobic exercises (Table 3).

Table 4 shows distribution of studied sample with Sleeping Position and comparison's significant and shows

Table 1: Distribution of studied sample according to (SDCv.) Observed Frequencies, Percent's and comparison's significant (N = 270)

SDCv.	Classes	No.	%	C.S. (*) p-value
Gender	Male	143	53	p = 0 .361 (NS)
	Female	127	47	
Age Groups	20 _	12	4.4	χ^2 = 69.578 p = 0.000 (HS) Mean±SD 54.23±14.51
	30 _	34	12.6	
	40 _	57	21.1	
	50 _	60	22.2	
	60 _	57	21.1	
	70 _	40	14.8	
	80 _ 90	10	3.7	
Occupation	Earner	79	29.3	χ^2 = 112.13 p = 0.000 (HS)
	Housewife	106	39.3	
	Employee	43	15.9	
	Retired	42	15.6	
Educational level	Illiterate	77	28.52	χ^2 = 30.111 p = 0.000 (HS)
	Primary	74	27.41	
	Intermediate	47	17.41	
	Preparatory	36	13.33	
	University and above	36	13.33	
Marital Status	Single	21	7.78	χ^2 = 30.111 p = 0.000 (HS)
	Married	194	71.85	
	Others	55	20.37	

(*) HS: Highly Sig. at p<0.01, S: Sig. at p<0.05, NS: Non Sig. at p>0.05, Testing based on One-Sample Chi-Square test and Binomial test

Table 2: Distribution of studied sample with "Risk Factors" and comparison's significant (N = 270)

Risk Factors	Responses	No.	%	C.S. (*) p-value
Diabetes Mellitus	No	167	61.9	p = 0.000 (HS)
	Yes	103	38.1	
Increase blood pressure	No	131	48.5	p = 0.670 (NS)
	Yes	139	51.5	
Increase in intracranial pressure	No	261	96.7	p = 0.000 (HS)
	Yes	9	3.3	
Previous eye injuries	No	150	55.6	p = 0.000 (HS)
	Yes	120	44.4	
Eye surgeries	No	236	87.4	p = 0.000 (HS)
	Yes	34	12.6	
Birth defects	No	258	95.6	p = 0.000 (HS)
	Yes	12	4.4	
Elevated of intraocular pressure (IOP)	No	17	6.3	p = 0.000 (HS)
	Yes	253	93.7	
Wearing Sunglasses	No	101	37.4	p = 0.000 (HS)
	Yes	169	62.6	

(*) HS: Highly Sig. at p<0.01, NS: No Sig. at p>0.05, Testing are based on the Binomial test, Red color groups denoted a measuring of failure scale(s) assessed

Table 3: Distribution of studied sample with "Daily Activities- Physical activities" and comparison's significant (N = 270)

Daily Activities / Physical activities	Responses	No.	%	C.S. (*) p-value
Lifting heavy weights	No	246	91.1	p = 0.000 (HS)
	Yes	24	8.9	
Aerobic Exercises	No	239	88.5	p = 0.000 (HS)
	Yes	31	11.5	

(*) HS: Highly Sig. at p<0.01, Testing are based on Binomial test, Red color groups denoted a measuring of failure scale(s) assessed

Table 4: Distribution of studied sample with "Daily Activities-Sleeping Position" and comparison's significant (N = 270)

Daily Activities sleeping Position	Responses	No.	%	C.S. (*) p-value
Sleep Position (Prone Position Sleeping)	No	232	85.9	p = 0.000 (HS)
	Yes	38	14.1	
Sleep Position (Dorsal Position Sleeping)	No	161	59.6	p = 0.000 (HS)
	Yes	109	40.4	
Sleep Position (Sleeping on one Side)	No	147	54.4	p = 0.162 (NS)
	Yes	123	45.6	

(*) HS: Highly Sig. at p<0.01, NS: Non Sig. at p>0.05, Testing are based on Binomial test, Red color groups denoted a measuring of failure scale(s) assessed

38(14.1%) of studied respondents who were sleep position (Prone Position Sleeping), while 109(40.4%) of them had sleeping position (Dorsal Position Sleeping) and finally 123(45.6%) of them had their sleeping position on one side. Also the result shows that sleeping position among different groups has a highly significant different at p<0.01 are

Table 5: Distribution of studied sample with "Daily Activities- Electronic Devices" and comparison's significant (N = 270)

Daily Activities / Electronic Devices	Responses	No.	%	C.S. (*) p-value
Use of electronic devices (computer)	No	255	94.4	p = 0.000 (HS)
	Yes	15	5.6	
Use of electronic devices (Mobile)	No	98	36.3	p = 0.000 (HS)
	Yes	172	63.7	
Use of electronic devices (TV)	No	187	69.3	p = 0.000 (HS)
	Yes	83	30.7	

(*) HS: Highly Sig. at p<0.01, Testing are based on Binomial test, Red color groups denoted a measuring of failure scale(s) assessed

Table 6: Relationships between an Overall Risk Factors associated with Glaucoma in Adult Patients and their SDCv. (N = 270)

SDCv.	Groups	≤ Md		>Md		C.S. p-value
		No.	%	No.	%	
Gender	Male	72	50	71	56.3	C.C. = 0.063 p = 0.297 NS
	Female	72	50	55	43.7	
	Total	144	100	126	100	
Age Groups Yrs.	20 _	7	4.9	5	4	C.C. = 0.136 p = 0.537 NS
	30 _	23	16	11	8.7	
	40 _	26	18.1	31	24.6	
	50 _	32	22.2	28	22.2	
	60 _	30	20.8	27	21.4	
	70 _	22	15.3	18	14.3	
	80 _ 90	4	2.8	6	4.8	
	Total	144	100	126	100	
Occupation	Earner	40	27.8	39	31	C.C. = 0.119 p = 0.277 NS
	Housewife	59	41	47	37.3	
	Employee	27	18.8	16	12.7	
	Retired	18	12.5	24	19	
	Total	144	100	126	100	
Educational levels	Illiterate	39	27.1	38	30.2	C.C. = 0.085 p = 0.744 NS
	Primary	38	26.4	36	28.6	
	Intermediate	25	17.4	22	17.5	
	Preparatory	19	13.2	17	13.5	
	University and above	23	16	13	10.3	
	Total	144	100	126	100	
Marital Status	Single	11	7.6	10	7.9	C.C. = 0.154 p = 0.037 S
	Married	112	77.8	82	65.1	
	Others	21	14.6	34	27.0	
	Total	144	100	126	100	
	Low	51	35.4	46	36.5	C.C. = 0.061 p = 0.600 NS
Socio-Economic Status	Moderate	71	49.3	66	52.4	C.C. = 0.061 p = 0.600 NS
	High	22	15.3	14	11.1	
	Total	144	100	126	100	

(*) S: Sig. at P<0.05; NS: No Sig. at P>0.05; Statistical hypothesis are based on a Contingency's Coefficients test

accounted compared within there an expected outcomes under randomly assumed distribution, exceptional with "Sleep Position (Sleeping on one Side)" item, since no significant at p>0.05 are accounted.

Table 5 shows distribution of studied sample with Electronic Devices and comparison's significant and shows15(5.60%) of studied respondents who were using computer device, while 172(63.7%) of them are using mobile and finally 83(30.7%) of them are using TV device, since a highly significant different at p<0.01 are accounted compared within there an expected outcomes under randomly assumed distribution.

Table 6 shows Relationships between an Overall Risk Factors associated with Glaucoma the results shows that weak relationships had been recorded amongst redistribution of the percentile global mean of score (PGMS) for the studied whole factors that associated with Glaucoma disease in adults patients and patients (SDCv.) at p>0.05, with respect to "Gender, Age Groups, Occupation, Education levels and Socio-Economic Status", while strong relationship are accounted with respect to "Marital Status", since significant relationship was reported at p<0.05 and that are occurred through increasing of a married responding towards under a cutoff point with increasing of the responding levels for the others marital status and according to that, the preceding results are more reliable for this study, since the designed questionnaire due to the objectives of studied whole factors that associated with Glaucoma disease in adults patients could be amending for studied sampling population whatever differences with respondent's SDCv.

DISCUSSION

According to socio demographic characteristic Table 1 the result shows most of glaucoma patients were males and constitute 143(53.0%) with regard to the age group high numbers at the ages falling within the third, fourth and fifth age groups, since they are accounted 174(64.44%), as well as age of studied patients is estimated at the average 54.23 years. The result is agreement with previous study conducted by conducted by Song *et al.* [5]. Researchers examined the clinical and socio demographic characteristics of glaucoma patients at a tertiary referral center in Zimbabwe, finding that 267 (61.8%) of the patients were men and 165 (38.0%) were women. Between 10 and 110 years old, the patients' average age (±SD) was 62.66±15.94 years. According to the researcher, these findings were explained by the rising risk of glaucoma with advancing age [6] in 2013, demonstrate the number of people aged 40 to 80 years with glaucoma worldwide was 64 million and is predicted to increase to 76 million by 2020 and 112 million by 2040, because the prevalence of glaucoma becomes higher with age. Choi *et al.* [7] is agreement with our study conducted study Evaluation of the Relationship Between age and risk of Glaucoma and find patients' age group-≤40, 41-50, 51-60, 61-70, 71-80 and 81-92 years. Thereafter, the results were compared among the age groups. The mean in patients aged ≤40 years; it was 815.309 ± 75.723, 798.115 ± 66.040, 770.942 ± 52.774, 726.716 ± 63.979 and 715.968 ± 63.403 μm in patients aged 41-50, 51-60, 61-70, 71-80 and 81-92 years, respectively. The TM height tended to decrease with increasing age ($p<0.001$). TM height was significantly shorter in older patients than in younger ones. Therefore, risk factors may change with age and may contribute to increased glaucoma risk and prevalence. With regard for occupation the results appear the majority of them were a housewife and they are accounted 106(39.3%), explanation of this result the occupation or lifestyle of a person can influence the risk factors for glaucoma, certain environmental and lifestyle factors associated with an occupation may have an impact on eye health. For instance, housewives who spend a lot of time indoors and may have irregular sleep patterns, high stress or insufficient physical activity might face indirect risk factors for eye conditions, including glaucoma. On the other hand, individuals with jobs that require prolonged screen time or exposure to specific chemicals or environmental factors may have an increased risk of developing eye conditions. Oh *et al.* [8] demonstrate in their study the prevalence of glaucoma generally decreased with increasing levels of education and income but this trend did not hold at the top two levels of education and income, wherein the prevalence was either the same or somewhat higher. Occupation types were shown to be significantly associated with glaucoma ($p<0.0001$) and among all the occupations in the survey, farming, forestry, fishing showed the highest percentage of those with glaucoma (4.9%) and service/retail showed the lowest percentage (1.3%). In the multivariable adjusted model, the odds of glaucoma decreased with increasing income level and increased at the highest income quartile, though the odds were significant only for the top two quartiles. The odds of glaucoma showed neither a nonlinear relationship nor statistical significance with education level when adjusted for other factors. In contrast, age and gender remained significant even after adjusting for other factors. Also the result appear most of them having high numbers at the low education levels of under a primary school, since they are accounted 151(55.9%), this result is agreement with result of study conducted by Lerner and Yankelevich [9] their study about what do patients know about glaucoma and find in their study 54 patients (29 males) completed the questionnaire. 42.6% completed primary school, 37% secondary school and 20.4% tertiary studies. Finally most of them are married and accounted 194(74.85%) explanation of this result because of glaucoma more common in old age and most of them were married in our community because of our religion obligate the married. Msc *et al.* [10] disagreement with our result and mention risk factors considered in the analysis were gender, race, marital status, age, income and education. Two clinical variables baseline IOP and diabetes history were included, of the 7,621 patients with glaucoma who met the inclusion criteria, 4% were legally blind at presentation. Male gender, African American ethnicity, single marital status, older age, lower income and lower education were all risk factors. These associations remained significant in a multivariable regression. Table 2 distribution of studied sample with "Risk Factors" and comparison's significant results shows more than one third of them had a positive response towards "Diabetes Mellitus" item, since they are accounted 103(38.1%). Zhao *et al.* [11] carried out meta-analysis study related to Fasting Glucose and the Risk of Glaucoma and find Diabetes, diabetes duration and fasting glucose levels were associated with a significantly increased risk of glaucoma and diabetes and fasting glucose levels were associated with slightly higher IOP. Also the result shows more than half of them had a positive response towards "Increase Blood Pressure" item and accounted 139(51.5%), Lee *et al.* [12] study association among blood pressure, blood pressure medications and glaucoma in a nationwide electronic health records database disagreement with our study and find that low blood pressure is associated with increased risk of developing OAG in a national longitudinal electronic health records database. We did not find evidence supporting a differential effect of medically treated and untreated low BP. This study adds to the body of literature implicating vascular deregulation as a potential etiology for the development of OAG, particularly emphasizing the lack of influence of blood pressure medications on this relationship [13]. A systematic review and meta-analysis about Role of hypertension as a risk factor for open-angle glaucoma and find hypertension was able to increase the risk of open-angle glaucoma (OAG) and Diastolic Blood

Pressure (DBP) instability, whether high or low, can also increase the risk of Open angle glaucoma AG incidence. There for I think both high BP and low BP are associated with an increased risk of glaucoma (researcher). Only 9(3.30%) of them had a positive responses towards "Increase in intracranial pressure" item, 120(44.4%) of them had a positive response towards "Previous eye injuries", while 34(12.6%) of them had a positive response towards "Eye Surgeries" and 12(4.40%) of them had a positive responses towards "Birth defects", mainly of them 253(93.7%) had a positive response towards "Elevated of intraocular pressure (IOP)" item and finally about two third of them had a positive responses towards "Wearing Sunglasses" item and accounted 169(62.6%). According to a research by Ng and Lau [14], mention the traumatic glaucoma is a type of secondary glaucoma occurring because of various mechanisms related to the trauma of the eye. All types of ocular trauma have the potential to cause an elevation of the intraocular pressure (IOP) in the affected eye through various mechanisms. Without appropriate treatment, this can lead to irreversible glaucomatous damage to the optic nerve and potentially permanent loss of visual function. Shan *et al.* [15] find in their studies six risk factors for POAG were identified, including intraocular pressure (IOP) treatment, family history of glaucoma, myopia advanced age, male, female, the pooled ACI of PACG was 0.05% (95% CI = 0.00%-0.16%). Table 4 distribution of studied sample with "Daily Activities- Sleeping Position" and comparison's significant and shows 38(14.1%) of studied respondents who were sleep position (Prone Position Sleeping), while 109(40.4%) of them had sleeping position (Dorsal Position Sleeping) and finally 123(45.6%) of them had their sleeping position on one side [16]. Their study demonstrates the magnitude of Intra Ocular Pressure strongly correlates with the body position during IOP measurement. The head tilted downwards, supine, left lateral decubitus and right lateral decubitus positions result in a higher IOP than IOP at the seated position. Patients with Open-Angle Glaucoma OAG can potentially reduce IOP fluctuations by adjusting their daily postures. Also the result shows that sleeping position among different groups has a highly significant different at $p<0.01$ are accounted compared within there an expected outcomes under randomly assumed distribution, exceptional with "Sleep Position (Sleeping on one Side)" item, since no significant at $p>0.05$ are accounted [17]. Relationship Between Sleep Position and Glaucoma Progression The study highlights that the right lateral decubitus position is strongly associated with increased intraocular pressure and higher glaucoma progression, emphasizing the need to consider sleep position and individual risk factors in glaucoma management. Table 5 discussion of descriptive statistics results for distribution of studied sample with Electronic Devices. Table 5 distribution of studied sample with Electronic Devices and comparison's significant and shows 15(5.60%) of studied respondents who were using computer device, while 172(63.7%) of them are using mobile and finally 83(30.7%) of them are using TV device, since a highly significant different at $p<0.01$ are accounted compared within there an expected outcomes under randomly assumed distribution [18]. Changes in Intraocular Pressure While Using Electronic Devices in Sitting and Supine Positions. This study demonstrates different postural positions have an effect on IOP, as IOP is higher in the supine position than in the seated position. There was a decline in the IOP after 30 minutes of exposure in the sitting position. However, there are no changes in IOP that occur in the supine position. These findings suggest a potential link between mobile phone usage and postural changes in IOP, which could have implications for ocular health in individuals who frequently use mobile devices. Liu *et al.* [19] mention the smartphone overuse is linked to various ophthalmic problems, including eyestrain, ocular discomfort, dry eye, diplopia and blurry vision. A sensation of an increased intraocular pressure (IOP) is among the most frequent ophthalmic complaints after the prolonged use of a smartphone. However, the precise effect of smartphone use on IOP is unclear. It is likely that this reported symptom is related merely to tightness of the eyelid from dry eye. However, the possibility of an actual increase in IOP cannot be excluded since the close viewing of small text on a small screen (as during smartphone use) increases the accommodation and vergence demands, which are potentially associated with an increase in IOP. Table 6 discussion of descriptive statistics results for Relationships between an Overall Risk Factors associated with Glaucoma. Table 6 relationships between an Overall Risk Factors associated with Glaucoma the results shows that weak relationships had been recorded amongst redistribution of the percentile global mean of score (PGMS) for the studied whole factors that associated with Glaucoma disease in adults patients and patients (SDCv.) at $p>0.05$, with respect to Gender. Vajaranant *et al.* [20] demonstrate in their study the women not only outlive men but also outnumber men in glaucoma cases worldwide. Women are at higher risks for angle closure glaucoma but there is no clear gender predilection for open angle glaucoma. Of interest, there is some evidence suggesting that female sex hormones might be protective of the optic nerve. In addition, it is hypothesized that decreased estrogen exposure is associated with increased risk for open angle glaucoma, yet population-based studies present inconsistent results. Presently, there is insufficient evidence to support hormonal replacement therapy use in glaucoma prevention. In addition, it appears that women carry a larger burden of glaucoma blindness due to longevity and disadvantages in socioeconomics/health beliefs. Also the result shows there is no significant between age Groups and glaucoma, Yamamoto *et al.* [21] disagreement with our study and demonstrate the results of the simple and multiple models. Age was one of the variables that significantly correlated with the prevalence of glaucoma

in the simple and multiple models. Increased risk of glaucoma (open-angle and angle-closure) with aging has been demonstrated in several studies and today, age is known as one of the most important risk factors of glaucoma. Although the increased risk would appear to be due to the age-related increase in IOP, as demonstrated, IOP correlated with the prevalence of glaucoma in the multiple model even after adjustment for age. As the researcher's opinion developing age consider one of the most risk factors for developing glaucoma because of increase intraocular pressure another study conducted by Alwan and Kumait [22] and find there is no significant relationship between nurses' level of knowledge and their demographic characteristics. Also the result appear the Occupation, Education levels and Socio-Economic Status", while strong relationship are accounted with respect to "Marital Status", since significant relationship was reported at $p<0.05$ and that are occurred through increasing of a married responding towards under a cutoff point with increasing of the responding levels for the others marital status [21]. This study aimed to determine the relationship between the characteristics of respondents (age, gender and occupational status) and the quality of life of glaucoma patients. Result of the study shows the age with p-value 0668 and gender with p-value employment status in 0237 and 0105 with p values were not related to the quality of life of glaucoma patients. The results of logistic regression analysis showed that the employment status with a significance of 0046 was a factor related to the quality of life, conclusion of their study no relation to gender, age and income with the quality of life of patients with glaucoma in Makassar Community Eye Health Centers in 2018 was found.

CONCLUSIONS

Most of glaucoma patients were males and constitute 143(53.0%) with regard to the age group high numbers at the ages falling within the third, fourth and fifth age groups, since they are accounted 174(64.44%).Prevalence of "Primary (Idiopathic) open angle glaucoma" were more than half of studied sampled and represent 138(51.1%), while the prevalence of "Pesudoexfoliation related open angle glaucoma" type are accounted 35(13.0%). Diabetes mellitus, increase blood pressure, previous eye surgery and increase intra ocular pressure chronic eye diseases too highly positive responses among our studied sample, that increases eye pressure, which leads to glaucoma.

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